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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/599,160

Applicant(s)

HABETHA ET AL.

Examiner

Michael Mapa

Art Unit

2617

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-37 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 21 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 09/21/06 has been considered by the examiner.

Specification

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if

the required "Sequence Listing" is not submitted as an electronic document on compact disc).

3. The applicant has failed to provide proper headings for the specification and fails to distinguish which part belongs to the background, summary, drawings, etc...

Appropriate correction is required.

4. The disclosure is objected to because of the following informalities: The applicant has made errors on the specification with reference to the drawings (i.e. Paragraph [0027] wherein the applicant has disclosed the superframe structure to be 101 but also discloses the TBTT or BPST to be 101 as well). The examiner requests the applicant to make corrections on the specification that has errors in referencing the drawings.

Appropriate correction is required.

5. Claims 1, 14, 31, 4, 8, 13, 14, 22, 24, 25, 34 and 37 are objected to because of the following informalities:

With regards to claim 1, the applicant claims "the medium access time". However, there is insufficient antecedent basis. The examiner will interpret the claim to read as "a medium access time."

With regards to claim 14, the applicant claims "operating normally C", however there is no reference to 'C' in the previous claims and therefore does not have sufficient antecedent basis. The examiner will interpret the claim as not having 'C' in the claim language.

With regards to claim 31, the applicant claims "ad network". The examiner requests the applicant to change the claim language to state "ad hoc network".

With regards to claim 4, 8, 13, 14, 22, 24, 25, 34 and 37, the applicant claims DRP, however fails to provide the meaning of DRP in the claims. For the purpose of the examination and the rejection provided below, the examiner will interpret DRP as "Distributed Reservation Protocol". The examiner requests the applicant to amend the claims to incorporate "Distributed Reservation Protocol" to indicate DRP.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 states the limitation "including a first reservation for the own BP in the own beacon of the device in the at least one neighboring BP". The limitation is unclear and indefinite. For the purpose of the examination and the rejection provided below, the examiner will interpret claim 3 to mean that the own beacon of the device is the device in the neighboring BP.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3, 5-7, 9-11, 21-22 and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US Patent Publication 2003/0169697 herein after referenced as Suzuki) in view of Heberling (US Patent Publication 2003/0214967 herein after referenced as Heberling).

Regarding claim 1, Suzuki discloses "A method for a distributed beaconing period protocol for a device in an ad hoc network (300) of devices (301)" (**Fig. 4 & Paragraph [0183] of Suzuki, wherein Suzuki discloses having a parent daughter relationship between piconets, therefore an adhoc network**). Suzuki discloses "comprising the device (301) performing the steps of: dividing (502) the medium access time into a sequence of at least one contiguous superframe (102); partitioning the superframe (102) into a slotted Beaconing Period BP (104), having a plurality of contiguous beacon slots (105), followed by a data transfer period" (**Figs. 4 & 7 & 17 of Suzuki, wherein Suzuki discloses a superframe and a TDMA frame having a beacon, contention access period and contention free period as well as disclosing each user being a controller and having daughter networks with the**

same format, therefore a contiguous superframe having slotted beaconing period and contiguous beacon slots). Suzuki discloses “and associating with at least one of an existing ad hoc network BP(505) or creating a new ad hoc network BP (503) as the BP of the device” **(Paragraphs [0195] & [0199] of Suzuki, wherein Suzuki discloses participating as a daughter piconet in the adjacent piconet when receiving a beacon signal and becoming a parent piconet if no beacon signal is received).**

Suzuki discloses having a beacon transmitting time **(Paragraph [0173] of Suzuki).** However, Suzuki fails to explicitly recite “beginning at a Beacon Period Start Time (101).”

In a related field of endeavor, Heberling discloses a “superframe” **(Fig. 5 & Paragraph [0016] of Heberling, wherein Heberling discloses a superframe format).** Heberling continues to disclose “beginning at a Beacon Period Start Time (101)” **(Paragraph [0020] of Heberling, wherein Heberling discloses the beacon period having a start time and duration of the beacon period).**

Therefore it would have been obvious to one of ordinary skill in the art to modify the invention of Suzuki to incorporate the teachings of Heberling of having a start time and duration of the beacon period for the purpose of having the system informed of when the beacons from each device will start and thereby provide the system with more accurate information to manage the system better.

Regarding claim 2, Suzuki in view of Heberling discloses “The method of claim 1, further comprising the steps of: if the BP of the device is not protected in at least one neighboring BP, protecting (506) the unprotected BP in the at least one neighboring BP

and once the BP of the device is protected, operating normally (507) (600)"

(Paragraphs [0207] - [0210] of Suzuki, wherein Suzuki discloses a daughter piconet appearing in a state with no timeslot assigned and the parent piconet assigning the unassigned area for the daughter piconet wherein once the daughter piconet receives the beacon signal from the parent piconet, the daughter piconet will start operating in the unassigned area).

Regarding claim 3, Suzuki in view of Heberling discloses "The method of claim 2, wherein the protecting step further comprises the step of including a first reservation for the own BP in the own beacon of the device in the at least one neighboring BP"

(Paragraph [0206]–[0207] of Suzuki, wherein Suzuki discloses the daughter piconet sending a timeslot assignment request to the parent piconet, therefore the daughter piconet is sending a reservation request for its own BP).

Regarding claim 5, Suzuki in view of Heberling discloses "The method of claim 3, wherein the first associating step further comprises the steps of: choosing an empty slot (505) of the BP of the device; and beaconing (505) an own beacon of the device in the chosen empty slot" **(Paragraph [0206] – [0208] of Suzuki, wherein Suzuki discloses the daughter piconet sending a time slot assignment request from the parent piconet and receiving the parent piconet beacon signal including the unassigned area information so that the daughter piconet starts operating in the unassigned area).**

Regarding claim 6, Suzuki in view of Heberling discloses "The method of claim 5, further comprising the step of including information regarding the beacons of other

devices in the own beacon of the device" (**Fig. 4 of Suzuki, wherein Suzuki discloses the frame format of the parent having multiple users each user being a daughter of the parent network and having its own daughter network and beacons for other devices**).

Regarding claim 7, Suzuki in view of Heberling discloses "The method of claim 6, wherein the protecting step further comprises the step of including a second reservation in the own beacon of the device to announce the BP of said other devices" (**Fig. 4 of Suzuki, wherein Suzuki discloses the frame format of the parent having multiple users each user being a daughter of the parent network and each daughter network acting as a parent network having its own daughter network and beacons for other devices, therefore each parent network has a second reservation having the beaconing period of other devices**).

Regarding claim 9, Suzuki in view of Heberling discloses "The method of claim 3, wherein the associating step comprises the steps of: scanning the medium to detect at least one BP during the at least one superframe (502); if at least one BP is not detected, starting a new BP as the BP of the device at a beacon period start time calculated in a pre-determined manner" (**Fig. 4 & Paragraph [0199] of Suzuki, wherein Suzuki discloses not receiving a beacon signal from an adjacent station and operating as its own parent piconet, therefore it conducts scanning to determine if a beacon signal having a superframe with a beacon period is received and if not detected starting its own piconet having its own beacon period with its own start time**).

Suzuki in view of Heberling discloses "and if at least one BP is detected, deciding to

perform one of the steps of: i. joining at least one of the at least one detected BP as the BPs of the device (505), and ii. starting a new BP as the BP of the device at a beacon period start time determined in a pre-determined manner (503)" **(Fig. 4 & Paragraph [0195]-[0196] & [0199] of Suzuki, wherein Suzuki discloses receiving a beacon signal from the adjacent station and comparing if the address of the own station is newer than the adjacent station and deciding whether to join the adjacent station piconet as a daughter or operate as its own parent piconet).**

Regarding claim 10, Suzuki in view of Heberling discloses "The method of claim 9." **The examiner rejects claim 10 with the same arguments provided above (see claim 5).**

Regarding claim 11, Suzuki in view of Heberling discloses "The method of claim 10." **The examiner rejects claim 11 with the same arguments provided above (see claim 6).**

Regarding claim 21, Suzuki in view of Heberling discloses "The method of claim 2, wherein the operating normally step (507) (600) further comprises the step of terminating the BP" **(Paragraph [0153] of Suzuki, wherein Suzuki discloses clearing the unassigned area once the beacon information of the second piconet cannot be received because of a dynamic change in the communication environment).**

Regarding claim 22, Suzuki in view of Heberling discloses "The method of claim 2, wherein the operating normally step (507) (600) further comprises the step of clearing a DRP BP reservation of the device when no beacons are received during the BP for a pre-determined clearing number of consecutive superframes" **(Paragraph [0153] of**

Suzuki, wherein Suzuki discloses clearing the unassigned area once the beacon information of the second piconet cannot be received because of a dynamic change in the communication environment).

Regarding claim 26, Suzuki in view of Heberling discloses "The method of claim 1, further comprising the step of each device (301) of the ad hoc network of devices (300) beaconing in the same BP, by performing one of the substeps selected from the group consisting of: beaconing in parallel in each BP of each device (301) of said network of devices (300)" **(Fig. 12 & Paragraph [0129] of Suzuki, wherein Suzuki discloses a first and second piconet coexisting in the same frequency channel for piconet operation, therefore in parallel with each other).** Suzuki in view of Heberling discloses "and switching an own BP to beacon in a same BP as other devices (301) of said network of devices (300)" **(Fig. 4 of Suzuki, wherein Suzuki discloses having user D and user E to have the same beacon period, therefore when a device joins a daughter network it switches its own BP to beacon in the same BP as the other devices under the daughter network).**

Regarding claim 27, Suzuki in view of Heberling discloses "The method of claim 26, wherein a device(301) that does not have to switch its BP is chosen in a distributed way based on an identifier of each device (301) of said network of devices (300)" **(Paragraph [0196] & [0199] of Suzuki, wherein Suzuki discloses comparing the address information to see which is newer and depending on that deciding whether to join an existing piconet or operate as a parent piconet).**

Regarding claim 28, Suzuki in view of Heberling discloses "The method of claim

26, wherein a device (301) that does not have to switch its BP is chosen in a distributed way based on the number of occupied beacon slots in the BP of each device (301) of said network of devices (300)" **(Paragraph [0202] of Suzuki, wherein Suzuki discloses checking to see if the time slot request is practicable or if there are any time slot available; if there is, assigning a time slot to the adjacent station).**

Regarding claim 29, Suzuki in view of Heberling discloses "The method of claim 26, wherein a device (301) that does not have to switch its BP is chosen in a distributed way based on the size of the portion of the superframe (102) that is reserved by the beacons in a BP of a device (301) of said network of devices (300)" **(Paragraph [0202] of Suzuki, wherein Suzuki discloses checking to see if the time slot request is practicable or if there are any time slot available or time slot that hasn't been reserved by the beacons; if there is, assigning a time slot to the adjacent station).**

Regarding claim 30, Suzuki in view of Heberling discloses "The method of claim 1, wherein each device (301) of said network of devices (300) may beacon in a different BP" **(Fig. 4 of Suzuki, wherein Suzuki discloses the parent network having a beacon period and the daughter network having its own beacon period for user devices, therefore each device of said network may beacon in a different BP).**

10. Claims 4, 8, 12-20 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US Patent Publication 2003/0169697 herein after referenced as Suzuki) in view of Heberling (US Patent Publication 2003/0214967 herein

after referenced as Heberling) and further in view of Kondylis et al. (US Patent Publication 2003/0012176 herein after referenced as Kondylis).

Regarding claim 4, Suzuki in view of Heberling discloses "The method of claim 3, wherein the reservation is of type BP and priority = BP" **(Fig. 17 & Paragraphs [0206] – [0207] of Suzuki, wherein Suzuki discloses the daughter sending a timeslot assignment request and the format of the request having a beaconing period, therefore the priority = BP).**

Suzuki in view of Heberling fails to explicitly recite "a DRP reservation type."

In a related field of endeavor, Kondylis discloses "a DRP reservation type" **(Paragraph [0100] of Kondylis, wherein Kondylis discloses using a distributed reservation protocol (DRP) for scheduling broadcast transmissions, therefore a DRP reservation type).**

Therefore it would have been obvious to one of ordinary skill in the art to modify the invention of Suzuki in view of Heberling to incorporate the teachings of Kondylis of using a TDMA based distributed reservation protocol for scheduling for the purpose of ensuring data losses due to collisions are negligible **(Paragraph [0100] of Kondylis).**

Regarding claim 8, Suzuki in view of Heberling discloses "wherein the second reservation is of type BP and priority = BP" **(Fig. 17 & Paragraphs [0206] – [0207] of Suzuki, wherein Suzuki discloses the daughter sending a timeslot assignment request and the format of the request having a beaconing period, therefore the priority = BP).**

Suzuki in view of Heberling fails to explicitly recite "a DRP reservation type."

In a related field of endeavor, Kondylis discloses "a DRP reservation type" **(Paragraph [0100] of Kondylis, wherein Kondylis discloses using a distributed reservation protocol (DRP) for scheduling broadcast transmissions, therefore a DRP reservation type).**

Therefore it would have been obvious to one of ordinary skill in the art to modify the invention of Suzuki in view of Heberling to incorporate the teachings of Kondylis of using a TDMA based distributed reservation protocol for scheduling for the purpose of ensuring data losses due to collisions are negligible **(Paragraph [0100] of Kondylis).**

Regarding claim 12, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 8, wherein the protecting step further comprises the step of including a third reservation in the own beacon of the device in the neighboring BPs to announce the BP" **(Fig. 4 of Suzuki, wherein Suzuki discloses the frame format of the parent having multiple users each user being a daughter of the parent network and each daughter network acting as a parent network and having its own daughter network and beacons for other devices, therefore each parent network has a second reservation having the beaconing period of other devices as well as a 3rd reservation having the beaconing period of other devices).**

Regarding claim 13, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 12." **The examiner rejects claim 13 with the same arguments provided above (see claim 8).**

Regarding claim 14, Suzuki in view of Heberling discloses "The method of claim 3, wherein the step of operating normally C comprises the steps of: receiving beacons over the medium (601)" **(Fig. 4 of Suzuki, wherein Suzuki discloses the parent network having daughter networks and each daughter networks having its own beacons, therefore receiving beacons over the medium)**. Suzuki in view of Heberling discloses "and when a beacon comprising of type BP is received" **(Paragraphs [0206] - [0210] of Suzuki, wherein Suzuki discloses the daughter piconet being newly constructed in the same space as the parent piconet or moving from another space to the same space of the parent piconet requesting time slot assignment and transmitting a beacon signal)**. Suzuki in view of Heberling discloses "performing the steps of scanning for a new BP (603), and when a new BP is detected, protecting the new BP (602)" **(Paragraph [0195]-[0196] & [0199] & [0207]-[0210] of Suzuki, wherein Suzuki discloses receiving the beacon signal from an adjacent station and comparing to see which is newer and determining whether to be a parent piconet or a daughter piconet and allocating resources to the BP, therefore it is protecting the new BP by allocating resources for the new BP)**.

Suzuki in view of Heberling fails to explicitly recite "a DRP reservation type."

In a related field of endeavor, Kondylis discloses "a DRP reservation type" **(Paragraph [0100] of Kondylis, wherein Kondylis discloses using a distributed reservation protocol (DRP) for scheduling broadcast transmissions, therefore a DRP reservation type)**.

Therefore it would have been obvious to one of ordinary skill in the art to modify the invention of Suzuki in view of Heberling to incorporate the teachings of Kondylis of using a TDMA based distributed reservation protocol for scheduling for the purpose of ensuring data losses due to collisions are negligible (**Paragraph [0100] of Kondylis**).

Regarding claim 15, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 14, wherein the protecting steps further comprise the step of including a fourth reservation in the own beacon of the device to protect the BP" (**Fig. 4 of Suzuki, wherein Suzuki discloses the frame format of the parent having multiple users each user being a daughter of the parent network and each daughter network acting as a parent network and having its own daughter network and beacons for other devices, therefore each parent network having multiple devices has multiple reservations such as a second reservation having the beaconing period of other devices as well as a 3rd and 4th reservation having the beaconing period of other devices**).

Regarding claim 16, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 15." **The examiner rejects claim 16 with the same arguments provided above (see claim 8).**

Regarding claim 17, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 14, wherein the step of operating normally (507) (600) further comprises the step of a device optionally switching BP if two or more BPs co-exist (605) (606) (607)" (**Fig. 12 & Paragraph [0210] of Suzuki, wherein Suzuki**

discloses the parent network assigning resources to any other network that newly appears in the same space, therefore two or BPS co-exist are switched).

Regarding claim 18, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 17, wherein the step of switching BP by the device further comprises the steps of: including a special switching announcement field in a beacon to announce a new BP (606)" **(Paragraph [0196] of Suzuki, wherein Suzuki discloses comparing the address information to determine which is newer, therefore the address information is the special switching announcement field to announce a new BP).** Suzuki in view of Heberling and further in view of Kondylis discloses "and beaconing for at least a predetermined announcement number of consecutive superframes with the beacon including the special switching announcement field (605)" **(Fig. 17 of Suzuki).**

Regarding claim 19, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 18, wherein the beaconing step further comprises one of the steps selected from the group consisting of: (a) performing the steps of-including a DRP reservation of type BP to protect the new BP, if the new BP is not already protected (607), and stopping transmission of the beacon, if the new BP is already protected; and (b) transmitting a beacon in the new BP" **(Paragraphs [0207] - [0210] & [0153] of Suzuki, wherein Suzuki discloses a daughter piconet appearing in a state with no timeslot assigned and the parent piconet assigning the unassigned area for the daughter piconet wherein once the daughter piconet receives the beacon signal from the parent piconet, the daughter piconet will start operating in**

the unassigned area and continues to disclose clearing the setting of the unassigned area once the beacon information from the daughter piconet cannot be received due to a dynamic change in the communication environment).

Regarding claim 20, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 18, wherein the step of operating normally (507) (600) further comprises the steps of: when a beacon comprising a BP switching announcement of another device is received, performing the steps of scanning for a new BP (603), and when a new BP is detected, protecting the new BP (602))" **(Paragraph [0195]-[0196] & [0199] & [0207]-[0210] of Suzuki, wherein Suzuki discloses receiving the beacon signal from an adjacent station and comparing to see which is newer and determining whether to be a parent piconet or a daughter piconet and allocating resources to the BP, therefore it is protecting the new BP by allocating resources for the new BP).**

Regarding claim 23, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 14, wherein the step of operating normally (507) (600) further comprises the step of when at least two BPs collide, until there are no longer any colliding BPs, repeatedly performing at least one of the steps selected from the group consisting of: (a) performing the substeps of: searching each colliding BP for enough empty beacon slots for the devices of an other colliding BP (608), and moving at least one colliding BP to a non-colliding beacon period start time (604); and (b) performing the substeps of searching the superframe for enough empty beacon slots for the own BP, and moving the BP to the empty slots in the superframe (608)" **(Fig. 14 &**

Paragraphs [0163] & [0168]-[0175] of Suzuki, wherein Suzuki discloses the method for allowing the coexistence of a plurality of piconets using a same frequency channel without interfering each other).

Regarding claim 24, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 23, wherein the step of operating normally (507) (600) further comprises the step of when an existing DRP reservation collides with a BP, moving the colliding DRP reservation to a non-colliding time (608)" **(Paragraphs [0171]-[0173] of Suzuki, wherein Suzuki discloses determining if there is any duplicate or colliding information and adjusting the information so that the assignment of the own piconet will not overlap the assignment of the other piconet, therefore since Suzuki discloses the adjustment of colliding information, one of ordinary skill in the art would recognize that the adjustment of the colliding information whether the BP or the DRP reservation or any other information is dependent on the system and user needs and design).**

Regarding claim 25, Suzuki in view of Heberling and further in view of Kondylis discloses "The method of claim 23, wherein the step of operating normally (507) (600) further comprises the step of when an existing DRP reservation collides with a BP, moving the BP to a non-colliding time (604) " **(Paragraphs [0171]-[0173] of Suzuki, wherein Suzuki discloses determining if there is any duplicate or colliding information and adjusting the information so that the assignment of the own piconet will not overlap the assignment of the other piconet as well as disclosing**

adjusting the beacon transmitting time so as not to overlap with the other piconets).

11. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US Patent Publication 2003/0169697 herein after referenced as Suzuki) in view of Kim et al. (US Patent Publication 2003/0103487 herein after referenced as Kim).

Regarding claim 31, Suzuki discloses "A distributed beaconing apparatus for an ad hoc network device" (**Fig. 4 & Paragraphs [0183] & [0199] of Suzuki, wherein Suzuki discloses having a parent daughter relationship between piconets and a station having capabilities that can join to become a daughter piconet or become a parent piconet, therefore an adhoc network device).** Suzuki discloses "comprising: a receiver (404) for receiving beacons (105) and data transfers from other ad hoc network devices (301)" (**Paragraph [0195] of Suzuki, wherein Suzuki discloses receiving beacon signals).** Suzuki discloses "a transmitter (401) for transmitting own beacons of the device and data" (**Paragraph [0197] of Suzuki, wherein Suzuki discloses sending a request to the control station of the adjacent piconet, therefore a transmitter).** Suzuki discloses "a distributed beacon period processing component (403) that processes received beacons and own beacons of the device (301) for transmission" (**Paragraph [0196] of Suzuki, wherein Suzuki discloses comparing the address of the own station with the adjacent station, therefore one of ordinary skill in the art would recognize that a processor is**

needed in complex machineries to perform such complex task). Suzuki discloses "a controller (402) operatively coupled to said distributed beacon processing component (403)" **(Paragraph [0199] of Suzuki, wherein Suzuki discloses the station to operate as a parent piconet, therefore it becomes a controller of the piconet).** Suzuki discloses "and configured to direct said processing component to i. divide the medium into a sequence of superframes (102) comprising at least one slotted beaconing period (BP) (104) and including a certain number of beacon slots, said slotted BP (104) being followed by a data transfer period (103) " **(Figs. 4 & 7 & 17 of Suzuki, wherein Suzuki discloses a superframe and a TDMA frame having a beacon, contention access period and contention free period as well as disclosing each user being a controller and having daughter networks with the same format, therefore a contiguous superframe having slotted beaconing period and contiguous beacon slots).** Suzuki discloses "and ii. associate with at least one of an existing ad hoc network BP and a new ad hoc network BP as the BPs of the device (301)" **(Paragraphs [0195] & [0199] of Suzuki, wherein Suzuki discloses participating as a daughter piconet in the adjacent piconet when receiving a beacon signal and becoming a parent piconet if no beacon signal is received).**

Suzuki fails to explicitly recite "each having a pre-determined beacon slot length (202)."

In a related field of endeavor, Kim discloses "each having a pre-determined beacon slot length (202)" **(Paragraph [0036] of Kim, wherein Kim discloses**

generating a predetermined number of beacon slots arrayed at a predetermined time interval, therefore a predetermined beacon slot length).

Therefore it would have been obvious to one of ordinary skill in the art to modify the invention of Suzuki to incorporate the teachings of Kim of having a predetermined beacon slot length for the purpose of providing the system with better management capacities to determine if and when the system will be overloaded.

Regarding claim 32, Suzuki in view of Kim discloses "The apparatus of claim 31, wherein said controller (402) is further configured to direct said distributed beacon processing component (403) to: iii. protect the BPs of the device in neighboring BPs (506); and iv. operate normally, once the BP of the device is protected (507) (600)" **(Paragraphs [0207] - [0210] of Suzuki, wherein Suzuki discloses a daughter piconet appearing in a state with no timeslot assigned and the parent piconet assigning the unassigned area for the daughter piconet wherein once the daughter piconet receives the beacon signal from the parent piconet, the daughter piconet will start operating in the unassigned area).**

Regarding claim 33, Suzuki in view of Kim discloses "The apparatus of claim 32, wherein the controller is further configured to: choose an empty slot of the BP of the device; and beacon an own beacon of the device in the chosen empty slot" **(Paragraph [0206] – [0208] of Suzuki, wherein Suzuki discloses the daughter piconet sending a time slot assignment request from the parent piconet and receiving the parent piconet beacon signal including the unassigned area information so that the daughter piconet starts operating in the unassigned area).**

12. Claims 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US Patent Publication 2003/0169697 herein after referenced as Suzuki) in view of Kim et al. (US Patent Publication 2003/0103487 herein after referenced as Kim) and further in view of Kondylis et al. (US Patent Publication 2003/0012176 herein after referenced as Kondylis).

Regarding claim 34, Suzuki in view of Kim discloses "The apparatus of claim 32, wherein the distributed BP processing component protects the BP of the device by including a reservation of type BP and priority = BP in the own beacon of the device to announce the BP to neighboring devices" (**Fig. 17 & Paragraphs [0206] – [0207] of Suzuki, wherein Suzuki discloses the daughter sending a timeslot assignment request and the format of the request having a beaconing period, therefore the priority = BP**).

Suzuki in view of Heberling fails to explicitly recite "a DRP reservation type."

In a related field of endeavor, Kondylis discloses "a DRP reservation type" (**Paragraph [0100] of Kondylis, wherein Kondylis discloses using a distributed reservation protocol (DRP) for scheduling broadcast transmissions, therefore a DRP reservation type**).

Therefore it would have been obvious to one of ordinary skill in the art to modify the invention of Suzuki in view of Kim to incorporate the teachings of Kondylis of using a

TDMA based distributed reservation protocol for scheduling for the purpose of ensuring data losses due to collisions are negligible (**Paragraph [0100] of Kondylis**).

Regarding claim 35, Suzuki in view of Kim and further in view of Kondylis discloses "The apparatus of claim 34, wherein the distributed BP processing component is further configured to include information regarding the beacons of other devices in the own beacon of the device" (**Fig. 4 of Suzuki, wherein Suzuki discloses the frame format of the parent having multiple users each user being a daughter of the parent network and having its own daughter network and beacons for other devices**).

Regarding claim 36, Suzuki in view of Kim and further in view of Kondylis discloses "The apparatus of claim 35, wherein the controller (402) is further configured to control the distributed BP to: scan the medium to detect at least one BP during the at least one superframe (502); if at least one BP is not detected (503), start a new BP as the BP of the device at a beacon period start time calculated in a pre-determined manner" (**Fig. 4 & Paragraph [0199] of Suzuki, wherein Suzuki discloses not receiving a beacon signal from an adjacent station and operating as its own parent piconet, therefore it conducts scanning to determine if a beacon signal having a superframe with a beacon period is received and if not detected starting its own piconet having its own beacon period with its own start time**).

Suzuki in view of Heberling discloses "and if at least one BP is detected, decide to perform one of (504): i. join one of the at least one detected BP as the BP of the device (505), and ii. start a new BP as the BP of the device at a BP start time determined in a

pre-determined manner (503)" (Fig. 4 & Paragraph [0195]-[0196] & [0199] of Suzuki, wherein Suzuki discloses receiving a beacon signal from the adjacent station and comparing if the address of the own station is newer than the adjacent station and deciding whether to join the adjacent station piconet as a daughter or operate as its own parent piconet).

Regarding claim 37, Suzuki in view of Kim and further in view of Kondylis discloses "The apparatus of claim 36, wherein for normal operation (507) (600) the controller (402) is further configured to: when a received beacon includes at least one of a DRP reservation of type BP and a BP switching announcement for another device scan for a new BP (603), and when a new BP is detected, protect the new BP (602); when a beacon of a neighbor is received, protect the neighbor BP (602)" (Paragraph [0195]-[0196] & [0199] & [0207]-[0210] of Suzuki, wherein Suzuki discloses receiving the beacon signal from an adjacent station and comparing to see which is newer and determining whether to be a parent piconet or a daughter piconet and allocating resources to the BP, therefore it is protecting the new BP by allocating resources for the new BP or the neighbor BP). Suzuki in view of Kim and further in view of Kondylis discloses "when the device switches BPs announce in the own beacon of the device, for a predetermined announcement number of consecutive superframes, that the device is switching BP (606))" (Fig. 17 & Paragraph [0196] of Suzuki, wherein Suzuki discloses comparing the address information to determine which is newer, therefore the address information is the special switching announcement field to announce a new BP). Suzuki in view of Kim and

further in view of Kondylis discloses "optionally switch BPs if two or more BPs co-exist (608))" **(Fig. 12 & Paragraph [0210] of Suzuki, wherein Suzuki discloses the parent network assigning resources to any other network that newly appears in the same space, therefore two or BPS co-exist are switched)**. Suzuki in view of Kim and further in view of Kondylis discloses "terminate the BP; clear a DRP BP reservation of the device when no beacons are received during the BP for a pre-determined clearing number of consecutive superframes" **(Paragraphs [0207] - [0210] & [0153] of Suzuki, wherein Suzuki discloses a daughter piconet appearing in a state with no timeslot assigned and the parent piconet assigning the unassigned area for the daughter piconet wherein once the daughter piconet receives the beacon signal from the parent piconet, the daughter piconet will start operating in the unassigned area and continues to disclose clearing the setting of the unassigned area once the beacon information from the daughter piconet cannot be received due to a dynamic change in the communication environment)**. Suzuki in view of Kim and further in view of Kondylis discloses "when at least two BPs collide, until there are no longer any colliding BPs repeatedly perform at least one function selected from the group consisting of search each colliding BP for enough empty beacon slots for the devices of an other colliding BP; and move at least one colliding BP to a non-colliding beacon period start time (608); and when an existing DRP reservation collides with a BP, moving the colliding DRP reservation to a non-colliding time of the data transfer period (604))" **(Paragraphs [0171]-[0173] of Suzuki, wherein Suzuki discloses determining if there is any duplicate or colliding information and adjusting the**

information so that the assignment of the own piconet will not overlap the assignment of the other piconet, therefore since Suzuki discloses the adjustment of colliding information, one of ordinary skill in the art would recognize that the adjustment of the colliding information whether the BP or the DRP reservation or any other information is dependent on the system and user needs and design).

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Mapa whose telephone number is (571)270-5540. The examiner can normally be reached on MONDAY TO THURSDAY 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne Bost can be reached on (571)272-7023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Mapa/
Examiner, Art Unit 2617

/Dwayne D. Bost/
Supervisory Patent Examiner,
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